INFERENTIAL FOCUS

BRIEFING

IF 4207 May 3, 2021

WELCOME TO A WORLD OF ROBOTIC OVERLORDS:

FEAR OF LOSING JOBS TO ROBOTS IS DISPLACED BY FEAR OF ROBOTS BECOMING THE BOSS

CONTEXT & DYNAMICS

The practice of taking control away *from humans and giving it to a "more accurate" machine and its artificial-intelligence software has become an aspect of automated managerial software. This software is slowly but surely displacing human supervisors and managers – that is, institutional decision-makers. Use of embodied computers in robots and software bots has become common in manufacturing and in the industrial Internet of Things. Deployment of such software makes sense in terms of efficiency, and it is hoped, in terms of productivity. But it has also started to invade the realm of monitoring, tracking and decision-making, and the human effects have been predictable: "It makes you feel numb," as one worker subjected to managerial software explained. Such software dumbs down humans working with it, and it even attempts to tell humans how to express emotions and how to act professionally…or be fired. Institutions have already become comfortable turning over decision-making to software. Yet some pushback has started; first, with lawsuits being filed on behalf of individuals who feel their autonomy is being breached, and second, with state legislatures and foreign governments passing laws that require such software to be more transparent and that regulate algorithmic bias.*

IMPLICATIONS

- *Expanding use of automated management software will cut costs by eliminating middle-management positions.*
- *Programming such artificial-intelligence programs will become more fraught with issues of responsibility for errors and biases.*
- *With increased use of tracking and monitoring software in the office, which can be enervating for employees and which increases turnover, salaries will go up just to attract needed workers.*
- *Increasingly sophisticated robots and software downplay the reliability of human expertise.*
- *White-collar unions will make a play for troubled supervisors and managers.*
- *Adjusting deep automated software to overcome biases embedded in data and human coders will eventually bring issues of responsibility to the courtrooms.*
- *Despite lawsuits and employee pushback, companies continue to focus on automated systems to increase efficiency.*

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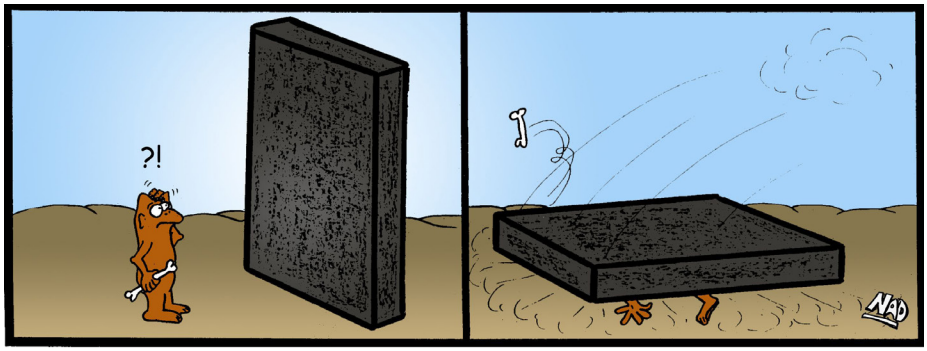
The Will to Power



2001: A Space Irony

On November 18, 2020, officers of Utah's Department of Public Safety were conducting routine flyovers in the desert to count bighorn sheep when they saw it: a nine-foot silver-colored slab stuck in the ground. Their report of a monolith standing on public land caused a huge stir, but then it was gone, taken down by unknown persons. Soon, monoliths were appearing around the world: California, Pennsylvania, the Netherlands, Morocco, Finland, Romania and Paraguay and on and on. (*Atlas Obscura*, 12/16/20)

The monolith reminded many of the one that hit the ground in the opening sequence of Stanley Kubrick's *2001: A Space Odyssey* (1968), a story based on novels by Arthur C. Clarke. The monolith first appears in the movie backed by a soundtrack of Richard Strauss' *Thus Spake Zarathustra,* an homage to the essay of that name by Friedrich Nietzsche, which focused on the human being's "will to power."

The space vehicle in Kubrick's movie is an embodiment of human desires. The spacecraft's computer system, called Hal, eventually started expressing its own strange will to power by trying to take over the craft. But Dr. Dave Bowman is having none of it, and starts detaching the computer's processing components, each module of which looks very much like a miniature version of the monolith. Hal's will to power to control the human environment is thwarted. Why did monoliths that recalled a decades-old narrative start surfacing in a pandemic year? Why did Clarke and Kubrick depict computers imbued with humans' will to power? Those might be questions for another discussion, but more critically in the real world: Were the new monoliths a warning that Hal's encoded desire is starting to come true?

New kinds of behavior, new ways to interact, new levels of machine capabilities and new ways to organize society, all happening at once – what could possibly go wrong?

Computers Everywhere

More than a decade ago, we outlined the economic and social implications of distributed computing, the ability of individuals with smartphones in their pockets to alter commercial and personal relationships. And then we noted that those miniature computers were training humans how to act, creating a new kind of consumer, new kinds of personal interactions and new ways to operate. The result of this new kind of human being, whom we called the digitally trained individual, was a person who was more impatient, less tolerant and more resourceful (see **IF 3815**).

All along the way, embodied computers, called robots, were being developed and deployed to function with increasing autonomy on factory floors, turning out automobiles, houses and even other computers. Eventually, chips with computer capabilities were placed in thermostats, toasters, refrigerators, factory machinery and more and more kinds of industrial components, all managed by larger computer systems, as part of what became known as the Internet of Things.

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◆ For most of the twentieth century, industries that installed automation, on average, created new jobs

faster than older ones got displaced. Starting in the 1980s, however, that dynamic flipped, and automation started eliminating existing positions faster than it created new ones.

◆ For the first time, robots ordered by nonautomotive companies exceeded the orders for robots in the automotive industry, 15,999 versus 15,045.

◆ A 2020 survey of corporate executives revealed that 80 percent of them had implemented some form of robotic process automation (RPA), and another 16 percent said they planned to do so within three years. To take an example, one firm, State Auto Insurance Companies, has used RPA to do 173,000 hours of work in areas such as underwriting and human resources.

◆ According to Forrester Research, RPAs are cheap, easy to use and compatible with more back-end systems. A bot can be built for around $10,000 and can eliminate between two and four jobs.

◆ Sales of automation software increased by 12 percent last year. Blue Prism, an RPA firm, claims that such software could replace between one-half and two-thirds of work currently done by humans.
(*New York Times*, 3/6/21; *Automation News Shift*, 3/21)

Introduction of artificial intelligence (AI) into the operational process quickly moved applications of software into the decision-making process.

Introduction of artificial intelligence (AI) into the operational process quickly moved applications of software into the decision-making process, affecting medicine, manufacturing, business management, finance, government and pretty much any field in which such software could be afforded. Software decision-making started displacing human decision-making. In more traditional fields, automation software and robots have assumed the responsibilities of supervisors, foremen and middle managers. That is where Hal's will to power deserves a closer look.

◆ Pymetric claims that its software, which is used by McDonald's, Boston Consulting Group, Kraft and Colgate-Palmolive, among others, can discern a job applicant's cognitive, social and emotional attributes, risk tolerance and learning ability. The number of human resources departments that depend on such predictive software in their hiring practices increased from 10 percent in 2016 to 39 percent in 2019. (*MIT Technology Review*, 2/11/21)

◆ RealPage, AppFolio and RentGrow provide landlords with a tenant-applicant screening tool that claims to be able to determine which potential renters will be of the highest quality. (*NBC*, 3/14/21)

◆ Stanford Health Care turned over to an algorithm the decision as to what sequence healthcare workers would follow when getting vaccinated; it determined that administrators and doctors working from home should get shots before medical professionals actually attending to patients. Only seven hospital resident physicians were among the first 5,000 employees vaccinated. (*Washington Post,* 12/23/20)

Those examples of the application of artificial intelligence and other software tools to decision-making can be amended when undesirable results surface (*e.g.,* racial or gender bias) because programmers make errors when coding software for robots and other automated devices. But when computer capabilities align neatly with managerial preferences, humans start becoming subservient to conclusions made by computers. Automated management, scheduling algorithms, workforce analytics, tracking programs and other tools displace supervisors and managers, making decisions that affect workers' assessments and behavior. Interviews with 20 workers in six different countries revealed that they did not fear losing their jobs to robots as much as they feared robots becoming their bosses.

"Your fear of being replaced by automation is a legitimate fear and one I would share, were I not, myself an automation."

◆ WorkSmart is a software bot that tracks workers' keystrokes, mouse clicks and the applications employees are running, all to

rate productivity. Every 10 minutes the software takes photos of employees' workstations to make sure they are doing their assigned jobs. If the software determines that employees are not working hard enough, they do not get paid – or are fired. (*Verge,* 2/27/20)

◆ Google, Amazon and other companies announced an AI-enhanced bot that listens to employees' phone calls, assesses their effectiveness and coaches them how to improve. Also, CallMiner says its AI software can accurately assess workers' professionalism, politeness and empathy. (*Verge*, 2/27/21)

◆ Staff.com's Time Doctor monitors employees' productivity in real time, and if it determines the worker is idling or distracted, prompts them to stay on task. The software takes screenshots and webcam photos of employees' screens to make sure they are working. (*Verge*, 2/27/21)

◆ In one insurance company, a worker-monitoring system, Cogito, allowed those on phone calls only one minute between calls to fill out insurance forms and required them to complete their conversations in 12 minutes, even though they were talking to customers experiencing terminal illness, dying relatives and other traumatic events. They were to maintain that pace for 10-hour days, with only 30 minutes for bathroom breaks… per month. (*Verge*, 2/27/21)

◆ Walmart has tested harnesses worn by warehouse workers that monitor all movements they make. (*Verge*, 2/27/21)

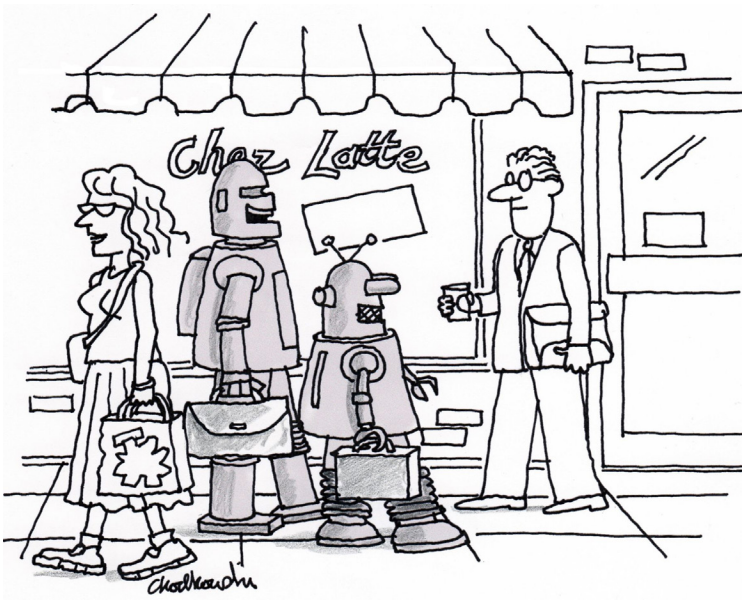
◆ Based on an algorithm's analysis, workers at Amazon warehouses are given a quota of items they are to process each hour; if they fail to meet that goal, they are fired. Amazon delivery drivers are given routes to drive drawn up by an algorithm. Amazon has patented wristbands that vibrate to keep workers engaged and moving. In a 2018 study, workers at Amazon warehouses were found to have sustained twice the national average of serious injuries. (*Verge*, 2/27/21)

◆ Researchers have developed an AI tutoring system that can track students' behavior, predict their classroom performance and deliver content and strategies to improve their performance. They claim the software can keep students from losing interest. (*New York Times*, 2/23/21)

◆ Computer vision companies provide real-time insights to optimize operations in industries such as agriculture, retail, insurance, construction and security. Humans then conform their behavior to those operational insights. (*Forbes*, 2/28/21)

Machine decisions are training humans to go faster than humans would and sometimes go.

That last item is indicative of the way software, AI and bots are becoming the boss. In agriculture, AI systems catch water leaks, soil depletion, pests, disease as well as components critical to growing crops, leaving the farmer to execute based on what the software captures. In retail, inventory management makes all decisions related to optimizing the product mix on shelves and telling employees when to restock. In insurance, software has now become the source to determine a property's risk profile. In construction, software examines floor plans, materials called for in those plans, schedules for delivery of needed materials and blueprints of architectural details and automates the cost estimation. (*Forbes,* 2/28/21)



" You know the great thing about human beings? They're biodegradable. "

Speeding Up Humans to Computer Speeds

With Time Doctor monitoring phone calls to keep employees working and Cogito placing shortened time frames on worker tasks, automated managerial decisions are conveying onto human behavior a characteristic typically associated with computing: speed. Machine decisions are training humans to go faster than humans would and sometimes go. In this way, companies seem to be increasing their need for speed in production, and that makes humans more dependent on software for quicker decisions about human behavior, moving Hal's desire a step closer.

The curious thing about AI conclusions is that they are inscrutable, leaving humans without a traceable process as to why or how a decision was reached. For instance, CallMiner tells employees at a call center whether they are behaving professionally, being sufficiently polite and expressing enough empathy. How the software arrives at those conclusions is lost in a database of past experiences through which the software somehow sifts and comes up with a judgment about human performance.

AI and automation software can do wonders for operations and processes, but they have two troublesome human issues: They speed up human behavior while downgrading human expertise, and they can become invasive of human thought, behavior and biology.

◆ Software dumbs down humans by replacing their experiences and thoughts with a database. Farmers no longer have to assess growth and apply their vast personal experiences to make decisions about their crops. They merely consult a readout and execute. In this way, expertise is no longer necessary (other than to fix computerized systems when they go down).

◆ AI and automation software are actually telling humans how to express human emotion or to convey human empathy on phone calls. They are replacing human resources and supervisory roles. One system's marketers claim that their software can even judge professionalism. As one employee who was subjected to this kind of assessment noted: "It makes you feel numb." (*Verge*, 2/27/21)

These accelerations of workflow and disruptions of human thought raise questions about finding the appropriate balance between brainpower and software stuffed with past experiences and between business efficiency and individuals' sense of self – or simply finding a balance between Hal's will to power and human autonomy.

> Sixty-four percent of all users joining an extremist group did so because of Facebook's recommendation software.

Pushback Starts

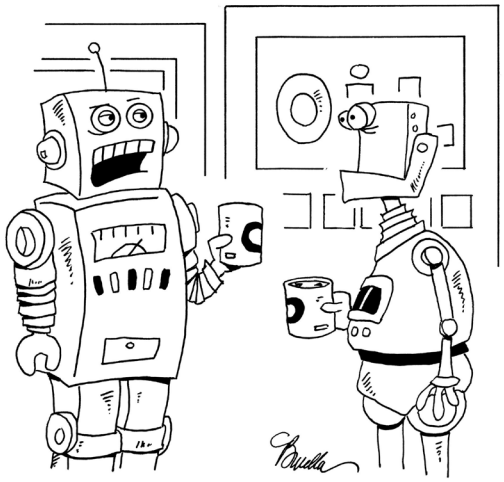
Facebook's algorithms, by the company's own admission, do not focus on eliminating false or inflammatory content but rather seek to connect people with such content to extend their "engagement" with the site. In fact, 64 percent of all users joining an extremist group did so because of Facebook's recommendation software. That is, software is training humans to do what the software says. This has caused concern among many people. That concern increased when it was discovered that Facebook's and other social media's software actually nurtured the anger that fueled the January 6 insurrection in Washington, D.C. (*MIT Technology Review*, 3/11/21)

As a result of these kinds of perspectives, the Edelman Trust Barometer this year revealed that trust in technology reached an all-time low in 17 of the 27 countries surveyed, and trust declined in 25 of those 27 countries. In the U.S., technology was the most trusted industry of all categories in 2020, but just one year later, trust in technology had fallen to an all-time low. (*Axios,* 3/31/21)

When health workers at a Stanford Health Care hospital learned that an algorithm had put at-home doctors and administrators ahead of them in line to get vaccinated, they launched public protests and screamed, "Fuck the algorithm!" and "Algorithms suck!" That is, they were chanting against a string of code rather than at the humans who wrote the code. Such actions took place because the hospital staff see the algorithms as responsible for their condition. Essentially, algorithms had become their boss. (*Washington Post*, 12/23/21)

◆ Students in the UK took to the streets last year to protest an algorithm that had been used to rank them for university placement. (*Washington Post*, 12/23/21)

◆ The European Union released rules to set limits on the use of artificial intelligence in driving cars, hiring practices,



"Sure, it seems harmless, but you hire one human and the next thing you know, they're taking your job."

bank lending, school enrollment selections and scoring exams. It would also limit the use of AI in law enforcement and court decisions. More severely, the rules ban the use of facial recognition software in public places. (*New York Times*, 4/22/21)

◆ Clearview AI, a facial recognition software company that claims it can identify criminals, is the defendant in at least 11 lawsuits for invasion of biometric privacy. (*Los Angeles Times*, 3/9/21)

◆ Illinois passed a law mandating that companies using AI in job interviews must inform the applicant before the interview that such technology is being used during and after the interview. (*MIT Technology Review,* 2/11/21)

◆ The California State Assembly proposed the "Automated Decision Systems Accountability Act," intended to regulate algorithmic bias in areas such as housing, lending, hiring and other areas in which such systems are being applied. (*NBC,* 3/14/21)

◆ Citizens' exasperation flared when New York City police were called to stem a developing conflict between tenants and sent into the building an AI-enabled robotic dog. As one resident exclaimed: "You can't give me a living wage; you can't raise a minimum wage; you can't give me affordable housing…Instead, we got money, taxpayer money, going to robot dogs?" (*New York Times*, 4/18/21)

At present, citizens and some governments have started acting like *2001: A Space Odyssey's* Dr. Dave Bowman, slowly dismantling the advance of some software applications when they override human privacy, decide human achievements and, increasingly, displace human decision-making.

What Is Next?

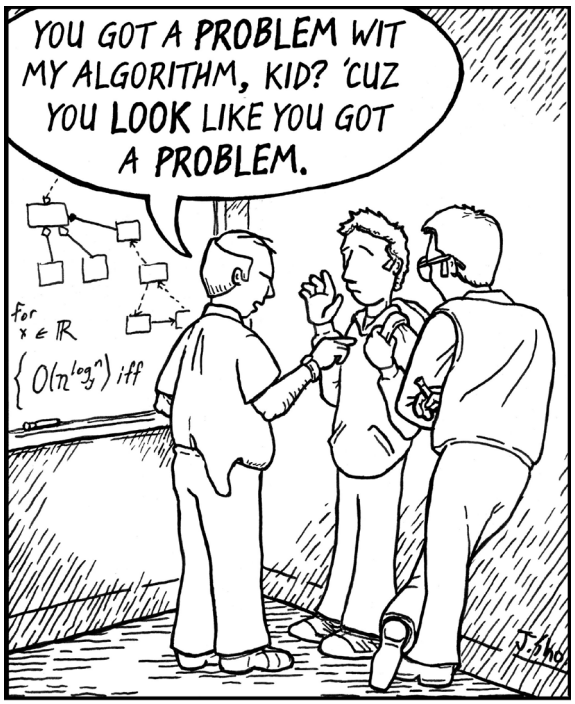
Quite early in the era of AI, scientists such as Stephen Hawking warned against the risks of pushing such capabilities forward. They were mostly concerned about an artificial brand of intelligence surpassing human capabilities and becoming new masters.

What they did not worry about was the way in which AI would subsume human decision-making in managerial terms and become overlords of the workspace and the social media space. Managerial software can create great leaps in efficiency and, at the same time, make remaining workers subservient to a digitized boss. AI can make some decisions with more precision than humans, but it comes up short in more humanistic areas of decision-making, downplaying human expertise and overriding some human thought processes.

> In a way, humans seem to be accepting the role of vassal to the digital masters they have created.

In Kubrick's *2001: A Space Odyssey,* Nietzsche's will to power – likely a distortion of the phrase "survival of the fittest," itself a distortion of Darwin's "natural selection" – became embodied in a human-created machine, making it the kind of human risk that Hawking warned against in AI.

Lately, humans seem to be getting comfortable with turning over processes, decisions and reasoning to such inscrutable decision-makers (*e.g.*, RPAs, Pymetric, RealPage and CallMiner). For instance, a recent study showed that humans tend to increase their trust of software conclusions as problems get more complicated. That is, humans just believe that computers are better than humans at solving problems that are difficult for humans, forgetting that computers are human creations and that computers can train human behavior…and evidently human beliefs as well. (*Science Alert,* 4/17/21)



Jim unwittingly wanders into a rough section of the Computer Science department.

Companies are becoming more and more accustomed to receiving, accepting and acting on conclusions provided by bots and software. In a way, humans seem to be accepting the role of vassal to the digital masters they have created. Indeed, many new jobs for humans involve merely servicing the automated decision-makers.

Which leads back to a question: Were the monoliths popping up around the world last year warnings posted by worried scientists and/or fretting humanists? Or were they

merely pranks implanted in the Utah desert and elsewhere by movie fans? Whether they had anything to say to today's humans, they did capture the public's imagination and suggested that the time is nigh to enter into a deeper rethink on emerging relations between humans and bots, robots and AI.

"And so with a positive attitude and proper algorithm, the Little Search Engine that Could got over the hill and brought back the information!"

Some of our previous looks at this topic:

inThought 3/2/21 The Rise Of Society's Next Grand Narrative: Perspectives And Values That Will Be Part Of A New Shared Vision

inThought 1/28/21 "Dance With The Unknown": The Illusion Of Control Meets Uncertain Realities, And Decision-Makers Tremble

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IF 3816 Artificial Intelligence, Not Your Average Algorithm: What AI Is And What AI Is Not, 8/2/17

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IF 3712 From Mobile-First To AI-First: The Digital World's Shift To Artificial Intelligence, 9/1/16